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Notes:

1. Untranslatable words are replaced with asterisks (*).
2. Texts in the figures are not translated and shown as it is.

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FULL CONTENTS

[Claim(s)]

[Claim 1] It is a movable jaw rest used for an ophthalmology instrument provided with an alignment apparatus which aligns using a reflected figure from an eye of an alignment index to be examined which projected an alignment index on an eye to be examined, and was observed by an anterior eye segment observation optical system, A movable jaw rest having countered an anterior eye segment observation optical system provided with a transportation device of the upper and lower sides, right and left, and the direction of order to an eye to be examined, having been arranged, and having a centering control means of an anterior eye segment observation optical axis direction.

[Claim 2] A movable jaw rest given in Claim 1, wherein a centering control means of said anterior eye segment observation optical axis direction is the frame reliance member relatively supported pivotally to an anterior eye segment observation optical axis direction to a jaw rest so that move regulation was possible.

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the movable jaw rest used for the ophthalmology instrument which projects alignment light on an eye to be examined, and was made to perform alignment adjustment.

[0002]

[Description of the Prior Art] optic-axis ***** [as opposed to an eye to be examined with a former and ophthalmology instrument] of an instrument, in order to perform what is called alignment adjustment easily and correctly, As an alignment index is projected on an eye to be examined and what performs position adjustment of an ophthalmology instrument based on reflected-figure positions, such as a cornea etc. of the alignment index observed by the anterior eye segment observation optical system, is indicated, for example to JP,H2-283352,A, As shown in JP,H7-362,A which there are some which move the joystick on the mount which carries an eye examination unit, move an eye examination unit in the direction of X-Y, and were made to carry out alignment regulation, and these people proposed previously, Many things etc. which move automatically the mount which carries a photography system in the direction of X-Y, and were made to carry out alignment regulation are proposed. When using ophthalmology instruments, such as this, in order to counter this optical system and to stabilize the head of ***** so it may make an eye to be examined meet

observation of an ophthalmology instrument thru/or the object lens of a photography optical system, ****, i.e., the jaw rest, and the frame holder (frame reliance) of the jaw are provided.

[0003]

[Problem to be solved by the invention]The alignment apparatus of the ophthalmology instrument proposed mostly has taken "observing an anterior eye segment" and the method of "moving the image of alignment index light reflected to the pupil or the cornea to the central part of the observation screen", and if this image is a certain amount of Japanese quince within the limits and cannot be observed, it produces trouble in operation in respect of a position check. And the image of the index light of the observation screen by the anterior eye segment observation optical system in the initial position of an ophthalmology instrument operation has a focal error produced from the difference between the position difference of the jaw rest contact part of *****, and an eye to be examined, i.e., eye the back, or projecting eyes, when it is especially Europeans and Americans, this is remarkable and it happens that this image cannot be recognized. For this reason, the following order of operation will be taken. That is, "the direction of X-Y being made "you making it move forward until the image of alignment index light can recognize an optical system", and agreeing", and an order of operation of "Making it move forward, doing the tracking of the XY direction (distance ****, advance required originally)" will be taken. Above, the first advance is the amount of advance required to cancel the focal error produced from the difference of back projecting eyes. For this reason, the following inconvenience arises as an ophthalmology instrument. Namely, ** The case where the amount of advance for distance ***** required originally can be insufficient, and cannot take a photograph according to the position difference (difference in the position by **** or projecting eyes) of an eye to be examined occurs. ** For this reason, it is necessary to take a large quantity which can be moved forward.

** Therefore, excessive movement magnitude is required and the main part of an instrument becomes large. Since it moves from an initial position and photography is performed, photography time becomes long. The problem to say arises.

[0004]A thing this invention is made in consideration of such the actual condition, the amount of advance of the optical system for distance ***** required originally is insufficient for it according to the position difference of an eye to be examined, and it becomes impossible to recognize an alignment index image is abolished, The main part of an instrument is prevented from becoming large, using movement magnitude of an excessive optical system as unnecessary, and it aims at providing the movable jaw rest which can constitute the ophthalmology instrument with an alignment apparatus by which photography time does not become long.

[0005]

[Means for solving problem]In this invention in order to attain said purpose, [as a movable jaw rest used for the ophthalmology instrument provided with the alignment apparatus which aligns using the reflected figure from the eye of an alignment index to be examined which projected the alignment index on the eye to be examined, and was observed by the anterior eye segment observation optical system] The anterior eye segment observation optical system provided with the transportation device for all directions of the upper and lower sides, right and left, and order to the eye to be examined was countered, it has been arranged, the centering control means of an anterior eye segment observation optical axis direction is provided, and a jaw rest is constituted.

[0006]It is advantageous to use the frame reliance member relatively supported pivotally to the anterior eye

segment observation optical axis direction to the jaw rest so that move regulation was possible as a centering control means of said anterior eye segment observation optical axis direction.

[0007]

[Function]The movable jaw rest of this invention projects an alignment index on an eye to be examined, and an anterior eye segment is observed according to an anterior eye segment observation optical system, When aligning by moving the index light figure reflected to the cornea or the iris of the eye to be examined to the center of an observation screen, with the up-and-down direction centering control means of a jaw rest or an ophthalmology instrument body part, While carrying out position ***** of the up-and-down direction of an anterior eye segment observation optical system optic axis and an eye to be examined, The eye to be examined aligns by turning on and projecting an alignment index, after enabling it to observe the anterior eye segment of an eye to be examined by an anterior eye segment observation optical system corresponding to a left eye or a right eye by the transportation device of the horizontal direction of the optical system body part of an instrument, or the transportation device of the horizontal direction of a jaw rest, but. With the centering control means of the anterior eye segment observation optical axis direction established in the jaw rest, without making an optical system body part including an anterior eye segment observation optical system thru/or a photography optical system move in the direction of a to-be-examined eye at this time, It is provided in a jaw rest or a jaw rest, and a jaw rest and the member which supports ***** to be examined in one are made to move forward to the direction (object lens side) of an anterior eye segment observation optical system, It can make it possible to recognize certainly the reflected-light image from the eye of an alignment index to be examined on the observation screen of an anterior eye segment observation optical system irrespective of the position difference (difference between eye the back or projecting eyes) of the jaw rest contact part of ***** , and an eye to be examined. Therefore, even when an eye to be examined is eye the back, it can prevent that the amount of advance of an anterior eye segment observation optical system thru/or a photography optical system is insufficient, and an alignment index image becomes impossible as for recognition thru/or photography of a tested part. Since it is not necessary to take a large quantity of an anterior eye segment observation optical system thru/or a photography optical system which can be moved forward, the main part size of an instrument can be made small and movement magnitude of the optical system to observation thru/or a photography position can be made less than an initial position, time which observation thru/or photography take can be short-****(ed).

[0008]If the frame reliance member relatively supported pivotally to the anterior eye segment observation optical axis direction to the jaw rest so that move regulation was possible is used as a centering control means of said anterior eye segment observation optical axis direction, an eye to be examined can be made to move to an anterior eye segment observation optical axis direction with very easy composition by use of the frame reliance member rocked focusing on a supporting pivotally pivotally point.

[0009]

[Working example]The embodiment of this invention is described based on attached Drawings. Drawing 1 is a perspective view at the time of carrying out this invention to the skin photographing instrument in a cornea, and drawing 2 and drawing 3 are flow charts which show the procedure of the skin photography in a cornea by this device.

[0010]In drawing 1, the photography system 1 which is the main part of the skin photographing instrument in a cornea which contained the whole optical system is formed on the pedestal 2, enabling free movement in

the upper and lower sides, right and left, and the direction of order (the direction of X-Y-Z).

The jaw rest base 3 is allocated in the horizontal direction to this pedestal 2 by the front part of the pedestal 2, enabling free movement.

The jaw rest 5 of specified shape is attached to the supporting spindle 4 upper part provided in the prescribed position of the center of an upper surface front part of this jaw rest base 3 enabling free rise and fall in the up-and-down direction. In the jaw rest base 3, the frame reliance support levers 7 and 7 of one pair of right and left set a prescribed interval, and are supported pivotally by the pivot 6 in each lower end at it, enabling free rotation, and. The frame reliance member 8 of the specified shape which connects the upper end of each support levers 7 and 7, and has the concave of frame reliance is attached, and the frame reliance member 8 is made to move in the direction of order to said photography system 1 by making these support levers 7 and 7 rock in the direction of order.

[0011]In order to operate each movement in movement of the horizontal direction of the jaw rest base 3, movement of the up-and-down direction of the jaw rest 5, and the direction of the frame reliance member 8 order, i.e., an anterior eye segment observation optical axis direction, [each mechanism (not shown) of the moving mechanism of the horizontal direction of the jaw rest base 3 built in the moving mechanism and the pedestal 2 of the rising and falling mechanism of the jaw rest 5 built in the jaw rest base 3, and the direction of the frame reliance member 8 order] Each movement can be adjusted now by operation of the operating button 11 of the control box 10 connected via the flexible code 9 from the control circuit and the pedestal 2 of this mechanism built in the pedestal 2, 12, and 13. Namely, the jaw rest 5 moves to the eye side of the left or the right to be examined by the right-and-left change of the operating button 11 (it does not move, when it is in the eye side to be examined), It adjusts so that the height of the jaw rest 5 may be adjusted by operation of the operating button 12 and an eye to be examined may come to the height of the object lens of an observation optical system through the dustproof window 1a of the housing front part of the photography system 1, It is ***** so that advance (or order **) of the frame reliance member 8 may be made to adjust by operation of the operating button 13 and the reflected figure (light spot) from the to-be-examined eye cornea of alignment index light can be recognized in the time of lighting of the alignment index in the photography system 1 on the observation screen (TV footage) by an anterior eye segment observation optical system.

[0012]In the housing of the photography system 1, the body part of the skin photographing instrument in a cornea is built in as a photography system. As these people proposed previously in the JP,H7-362,A (Japanese Patent Application No. 5-166132) gazette, for example, [this skin photographing instrument in a cornea] Slit Lighting Sub-Division of the eyeball side is carried out from an oblique position, and it is made to carry out image formation of the expansion image of a tested part by an enlarging radiography optical system on the image pick-up screen of the television camera of an anterior eye segment observation optical system to the anterior eye segment observation optical system optic axis by which an optic axis is arranged in the **** direction of an eye to be examined based on this illumination light.

On the other hand, the corneal reflex image of the alignment light projected on an eyeball side on an anterior eye segment observation optical system and the same axle is picturized with this television camera, According to the position on the image pick-up screen of the corneal reflex image of alignment light, an anterior eye segment observation optical system optic axis is received in the photography system 1, Make it move in the direction of X-Y automatically, and the light spot by a reflected light is made to come to the

prescribed position of a screen, You make it move forward in the direction of Z, making this light spot follow in a predetermined field, the focus of an anterior epithelium of cornea and the skin in a cornea is detected one by one by slit light with a television camera and the photo acceptance unit for focus detection through another ****, and enlarging radiography of the skin in a cornea of a tested part is carried out with a television camera.

[0013]Next, a procedure when photoing the skin in a cornea of the eye of ***** to be examined using the skin photographing instrument in a cornea provided with the movable jaw rest of this invention is explained based on the flow chart shown in drawing 2 and drawing 3. If the shooting button which the skin photographing instrument in a cornea which is first put into a power supply and is in a waiting state does not illustrate is pushed, the external image by an anterior eye segment observation optical system will project on the monitor display 1b provided in the housing back which built in the photography system 1. ***** puts a jaw on the jaw rest 5, makes a frame contact the frame reliance member 8, fixes a head to the jaw rest 5, and looks at a fixation target through the object lens (not shown) in the window 1a of housing according to a doctor's directions. Subsequently, a doctor operates each operating buttons 11 and 12 of horizontal [of the control box 10], and a perpendicular direction, operates the position of the jaw rest 5, he adjusts so that the to-be-examined view eye part of ***** may be reflected to said monitor display 1b, and he pushes said shooting button again.

[0014]By this 2nd button pressing operation, while the infrared light emitting diode for alignment indices in the photography system 1 lights up as an alignment index, the Lighting Sub-Division lamp for a focus lights up as an object for focusing, and slit Lighting Sub-Division of the eyeball side is carried out by infrared light through said window 1a. Subsequently, a doctor operates the operating button 13 on the control box 10, and makes the frame reliance member 8 of the jaw rest upper part move forward to the object lens side in the direction of Z until it can recognize the image (light spot) of the alignment index light by the reflected light from the cornea of alignment index light in the anterior eye segment image copied by the monitor 1b. Even when an eye to be examined is eye the back by this, the image of alignment index light can be recognized convenient.

[0015]If the image (light spot) of alignment index light is recognized, the X-axis and the Y-axis will drive, the photography system 1 will be moved to an eye to be examined until it goes into the prescribed range of X-Y alignment of image pick-up middle of the screen automatically according to the position of this light spot, and this state will be displayed on the monitor display 1b.

[0016]Thus, if the light spot of alignment index light comes in the prescribed range of image pick-up middle of the screen, You make it move forward aligning by following this light spot in the prescribed range until it drives the Z-axis, and said photo acceptance unit for focus detection detects a slit Mitsukami skin reflection in the direction of Z, follows it in the photography system 1 and it detects an inner leather reflection.

[0017]At the same time are a signal of this inner leather reflective detection, it stops the drive of the X-axis, the Y-axis, and the Z-axis, it stops movement of the photography system 1 and it makes said Lighting Sub-Division lamp for a focus switch off, when an inner leather reflection is detected, After making a stroboscope emit light, taking a photograph with a television camera, and recording the photoed skin expansion image in a cornea on a frame memory and being displayed on the monitor display 1b, the photography system 1 will return to an early position in readiness, and will be in a standby state.

[0018]In said embodiment, when an ophthalmology instrument was a skin photographing instrument in a cornea, explained per, but. If it is a jaw rest used for the ophthalmology instrument which aligns by projecting an alignment index on an eye to be examined, it may use for a fundus camera and a noncontact intraocular pressure meter may be sufficient, and observation thru/or photography of a tested part can be performed, without inconvenience arising regardless of the position difference of an eye to be examined.

[0019]

[Effect of the Invention]According to the movable jaw rest of this invention according to claim 1, it uses for the ophthalmology instrument which aligns by projecting alignment index light on an eye to be examined, Can align by being stabilized regardless of the position difference (do eye [the back] or not?) of the eye of ***** to be examined, and recognizing an alignment index image on an anterior eye segment observation screen, and. There is no necessity of taking a large quantity of the optical system of an ophthalmology instrument which can be moved forward, the main part size of an instrument can be made small, and time which lessens movement magnitude of the optical system to observation thru/or a photography position, and observation thru/or photography take from an initial position can be short-*****(ed).

[0020]According to the invention according to claim 2, the movable jaw rest which can be made to move an eye to be examined in the direction of an object lens of an anterior eye segment observation optical system with very easy composition can be provided.

[Brief Description of the Drawings]

[Drawing 1]It is a perspective view of the ophthalmology instrument using the movable jaw rest of this invention.

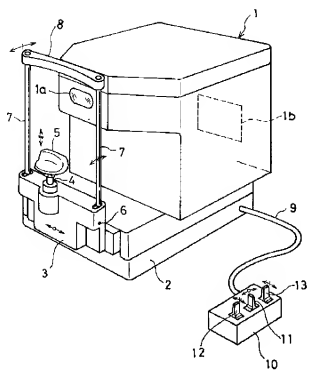
[Drawing 2]It is a flow chart which shows the operating procedure of the skin photography in a cornea by the ophthalmology instrument of drawing 1.

[Drawing 3]It is a flow chart which shows the procedure following drawing 2 of the skin photography in a cornea.

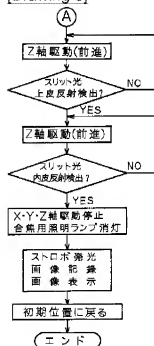
[Explanations of letters or numerals]

1 [-- Frame reliance member.] -- A photography system and 2 -- A pedestal and 5 -- A jaw rest and 8

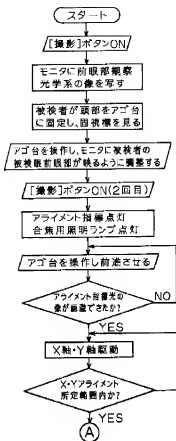
[Drawing 1]



[Drawing 3]



[Drawing 2]



[Translation done.]